

CLAIMS

I Claim:

1. A coal bed methane wastewater treatment system, comprising:
an ozone diffusion tank that receives coal bed methane wastewater (CBMW)
from one or more coal bed methane wells, wherein ozone is injected into said CBMW;
a prefilter tank fluidly connected to said ozone diffusion tank;
a primary filter fluidly connected to said prefilter tank; and
a secondary filter fluidly connected to said primary filter, wherein said
secondary filter receives the reject water from said primary filter.

2. The coal bed methane wastewater treatment system of Claim 1, including a
permeate tank fluidly connected to said primary filter and said secondary filter for
receiving the permeate water from thereof respectively.

3. The coal bed methane wastewater treatment system of Claim 2, wherein said
permeate tank provides backwash water to said prefilter tank for backwashing said
prefilter tank.

4. The coal bed methane wastewater treatment system of Claim 2, wherein said
permeate tank provides flush water to said primary filter for flushing said primary
filter.

1 5. The coal bed methane wastewater treatment system of Claim 2, wherein said
2 permeate tank provides flush water to said secondary filter for flushing said secondary
3 filter.

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6 6. The coal bed methane wastewater treatment system of Claim 2, wherein said
7 permeate tank is fluidly connected to a natural waterway for dispensing collected
8 permeate water.

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11 7. The coal bed methane wastewater treatment system of Claim 6, including a
12 sodium absorption ratio tank positioned between said permeate tank and said natural
13 waterway, wherein said sodium absorption ratio tank dissolves a desired amount of
14 calcium within said permeate water.

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17 8. The coal bed methane wastewater treatment system of Claim 1, including a
18 holding pond fluidly connected to said secondary filter for receiving the reject water
19 from said secondary filter.

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22 9. The coal bed methane wastewater treatment system of Claim 8, wherein said
23 holding pond is fluidly connected to said prefilter tank, said primary filter and said
24 secondary filter for receiving backwash water and flush water.

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27 10. The coal bed methane wastewater treatment system of Claim 8, wherein
28 said holding pond has a settling side and an evaporation side separated by a permeable
29 divider.

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3 11. The coal bed methane wastewater treatment system of Claim 10, including
4 an evaporation system for enhancing evaporation of water within said evaporation
5 side.

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8 12. The coal bed methane wastewater treatment system of Claim 1, wherein
9 said ozone is injected into said CBMW prior to entering said ozone diffusion tank.

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12 13. A coal bed methane wastewater treatment system, comprising:
13 an ozone diffusion tank that receives coal bed methane wastewater (CBMW)
14 from one or more coal bed methane wells, wherein ozone is injected into said CBMW
15 prior to entering said ozone diffusion tank;
16 a prefilter tank fluidly connected to said ozone diffusion tank;
17 a primary filter fluidly connected to said prefilter tank;
18 a secondary filter fluidly connected to said primary filter, wherein said
19 secondary filter receives the reject water from said primary filter;
20 a permeate tank fluidly connected to said primary filter and said secondary filter
21 for receiving the permeate water from thereof respectively, wherein said permeate tank
22 provides backwash water to said prefilter tank for backwashing said prefilter tank;
23 wherein said permeate tank provides flush water to said primary filter for
24 flushing said primary filter and wherein said permeate tank provides flush water to
25 said secondary filter for flushing said secondary filter;
26 wherein said permeate tank is fluidly connected to a natural waterway for
27 dispensing collected permeate water;

1 a sodium absorption ratio tank positioned between said permeate tank and said
2 natural waterway, wherein said sodium absorption ratio tank dissolves a desired
3 amount of calcium within said permeate water;

4 a holding pond fluidly connected to said secondary filter for receiving the reject
5 water from said secondary filter, wherein said holding pond is fluidly connected to said
6 prefilter tank, said primary filter and said secondary filter for receiving backwash
7 water and flush water;

8 wherein said holding pond has a settling side and an evaporation side separated
9 by a permeable divider; and

10 an evaporation system for enhancing evaporation of water within said
11 evaporation side.

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14 14. A method of treating coal bed methane wastewater, said method
15 comprising the following steps:

- 16 (a) collecting coal bed methane wastewater (CBMW) from one or more coal
17 bed methane wells;
18 (b) injecting ozone into said CBMW;
19 (c) inputting said CBMW into an ozone diffusion tank for a period of time;
20 (d) prefiltering said CBMW within a prefilter tank;
21 (e) filtering said CBMW through a primary filter;
22 (f) filtering the reject water from said primary filter through a secondary filter;
23 (g) transferring the permeate water from said primary filter and said secondary
24 filter to a permeate tank; and
25 (h) transferring the permeate water to a natural waterway.

1 15. The coal bed methane wastewater treatment system of Claim 14, including
2 the step of providing the permeate water from said permeate tank to said prefilter tank
3 for backwashing said prefilter tank.

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6 16. The coal bed methane wastewater treatment system of Claim 14, including
7 the step of providing the permeate water from said permeate tank to said primary filter
8 for flushing said primary filter.

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11 17. The coal bed methane wastewater treatment system of Claim 14, including
12 the step of dissolving calcium within the permeate water prior to said step (h)
13 transferring the permeate water to said natural waterway.

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16 18. The coal bed methane wastewater treatment system of Claim 14, including
17 the step of transferring the reject water from said secondary filter to a holding pond.

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20 19. The coal bed methane wastewater treatment system of Claim 18, including
21 the step of transferring the backwash water and the flush water to said holding pond.

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24 20. The coal bed methane wastewater treatment system of Claim 18, including
25 the step of enhancing the evaporation of water within said holding pond.